

MYBANJIR UPDATE SYSTEM USING MOBILE APPLICATION

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ABSTRACT

Nowadays, the usage of mobile technology has become a trend in a huge area such as education, entertainment, online business and other kind of area that gives benefits. Mobile applications enable new ways of working in an increasingly connected and mobile world. Enterprises realize the advantages and are gearing up to get ahead. With the increasing numbers of mobile applications being deployed, it's important for organizations to make the most efficient investments for their enterprise mobility needs. Mobile development platforms with multi-channel deployment capabilities, security, management and back-end integration capabilities make a whole lot of sense. Besides, mobile application allows fast and effective data management through the internetwork facilities. Data can be sent via wireless network from mobile device to the web server in a very fast connection. The MyBanjir Update System is the interactions between the web based servers communicate to mobile application. Flood information sometimes is not being announced in a suitable condition. The information usually spread in television and radio but when floods occurred, the electricity around the area is break down. This is the main problem for user to stay in touch with the flood reports. Using this MyBanjir Update Mobile Application helps them to get directs update using their smartphones together with the internet connection. The MyBanjir Update System for the web server is responsible for staff in Jabatan Meteorologi Pahang to pass the flood information to the user using the mobile application. The result of using this MyBanjir Update Mobile Application is much faster and can be used in anytime and anywhere as long as there is an internet connection.

ABSTRAK

Pada masa kini, penggunaan teknologi mudah alih telah menjadi satu trend di kawasan yang besar seperti pendidikan, hiburan, perniagaan dalam talian dan jenis lain kawasan yang memberikan manfaat. Aplikasi mudah alih membolehkan cara bekerja yang baru dalam dunia yang semakin berhubung dan mudah alih. Perusahaan menyedari kelebihan dan sedang menyiapkan diri untuk maju. Dengan nombor yang semakin meningkat aplikasi mudah alih yang digunakan, adalah penting bagi organisasi untuk membuat pelaburan yang paling berkesan untuk keperluan mobiliti perusahaan mereka. Platform pembangunan mudah alih dengan keupayaan pelbagai saluran penghantaran, keselamatan, pengurusan dan keupayaan Integrasi membuat banyak seluruh rasa. Selain itu, aplikasi mudah alih membolehkan pengurusan data yang cepat dan berkesan melalui kemudahan Internetwork. Data boleh dihantar melalui rangkaian wayarles dari peranti mudah alih ke pelayan web yang berkaitan yang sangat cepat. The MyBanjir Sistem Update adalah interaksi antara pelayan web berasaskan berkomunikasi dengan aplikasi mudah alih. Maklumat Banjir kadang-kadang tidak diumumkan dalam keadaan yang sesuai. Maklumat ini biasanya tersebar di televisyen dan radio tetapi apabila banjir berlaku, elektrik di sekitar kawasan ini rosak. Ini adalah masalah utama bagi pengguna untuk terus berhubung dengan laporan banjir. Menggunakan MyBanjir ini Kemaskini Permohonan Bergerak membantu mereka untuk mendapatkan kemas kini mengarahkan menggunakan telefon pintar mereka bersama-sama dengan sambungan internet. Sistem MyBanjir Kemaskini untuk pelayan web bertanggungjawab untuk kakitangan di Jabatan Meteorologi Pahang untuk lulus maklumat banjir kepada pengguna menggunakan aplikasi mudah alih. Keputusan Permohonan menggunakan MyBanjir Update Bergerak ini adalah lebih cepat dan boleh digunakan bila-bila masa dan di mana-mana sahaja selagi ada sambungan internet.

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LIST OF ABBREVIATIONS

FSKKP	Faculty of System Computer & Software Engineering
UMP	Universiti Malaysia Pahang
OS	Operating system
DFD	Data Flow Diagram
RAD	Rapid Application Development
UI	User Interface
PHP	Hypertext Preprocessor
PC	Personal Computer
SQL	Structured Query Language
HTML	HyperText Markup Language

CHAPTER 1

INTRODUCTION

1.1 Background

Nowadays, having a smartphones is one of the most important gadgets to have among the individual. A smartphone is capable of much more than making calls. This device is essentially a cell phone combined with a miniature computer that can surf the Web, send emails, store and play music, take photographs and videos. According to research studies, 70 percent of teens aged 13 to 17 now use smartphones and 79 percent of young adults between the ages of 18 and 24 own a smartphone (Nielsen, 2014).

In general, most smartphones use an application based interface, which allows users to download individual programs that can perform a variety of tasks. Apple's iPhone runs the iOS, and BlackBerry smartphones run the BlackBerry OS.

Other devices run Google's Android OS and Microsoft's Windows Phone (Cell Phone About, 2014). Most of the operating system supports their own mobile application that can be downloaded from the market when there is Internet connectivity. There many kind of applications such as calendar, games, reading item, photo editing tools or social application. The creation and developing the mobile application is limitless.

Basically, mobile application was built to solve problems and making life much easier. The smartphones itself are easily to carry and access compare to personal computers that much bigger and expensive than a smartphones. Besides, the function of the personal computer is much likely as same as the smartphones. The number of smartphones in use around the world will pass that of PCs for the first time this year (Gartner, 2014),. This shows that smartphones are most useable gadgets that can be done anything through smartphones.

1.2 Problem Statement

Catastrophe is one of the most frighten thing happen to anyone. It is a sudden and widespread disaster that has severe consequences, usually accompanied by destruction of assets and loss of life (Business Dictionary, 2014). One example of catastrophe that is often happened is the sudden flood. Flood cause by heavy rain that are nonstop until the water level rise (Wikipedia 2014). Many of the victims have lost their valuable things in just a second. They usually happened to be at work and realize their house has been devastated.

News and update that are being shown about this tragedy sometime are not being clearly stated and published (Reactions Net, 2013). Some of the report about the incident happened to be published in the newspaper or in the television.

People nowadays are not recently got any information about the weathers or any other information through newspaper and television (Street Wise, 2013). In that case some of the important things update or alert about flood in certain area might not be known by the citizens.

Besides that, sudden flood sinks almost the entire house and destroys their belongings. The victim did not know where the nearby evacuation center to secure their families. This can be a very important issues to save someone life. It is safer when the victim get to know the alerts and update about the flood so that they can be well prepared. In this case, MyBanjir Update System using mobile application is where they can get update about this thing. They only have to bring their smartphones and have the internet connection to get the alert about the flood news so that the citizens can be well prepared.

1.3 Goal & Objective

The goal of this project is to develop the MyBanjir Update System, the following *objectives* are set:

- To identify the need of the project to develop the system.
- To design the interface and architecture for MyBanjir Update using mobile application.
- To test the system performance of MyBanjir Alert from the user.

1.4 Project Scope

1. System Functionality

This system provides direct updates features from Jabatan Meteorologi Pahang about the catastrophe happened in Pahang state. The staff from the Jabatan Meteorologi Pahang will be sending an update of the flooding incident directly. Then, the updates are sent through mobile application that runs in Android operating system. The user will be alert with the flood incident happening around Pahang area. User can be well prepared after receiving this alert through their smartphones.

2. System User

There are 3 type of user for using this system. The first one is the user from the citizens mainly in Pahang. Each of the user should have their own smartphones and the operating system should be in Android base because this system only supported in Android. Second type of user is the staff of Jabatan Meteorologi Pahang. Staff will be update the alert about the flood incident immediately so that the user will receive early information. The third user is the admin. Admin is the only one who can control overall system. It includes from adding new staff, deleting and editing the information of the system.

3. Operating System

Running on Android operating system.

1.5 Methodology

For the methodology, Rapid Application Development (RAD) is being used in this project. It is a methodology to compress the analysis, design, build and test phases into a short or quick iterative development cycles. . When developing the system using the RAD development path meet the needs of their users effectively and have low maintenance cost. Figure 1.1 is the phases of the RAD.

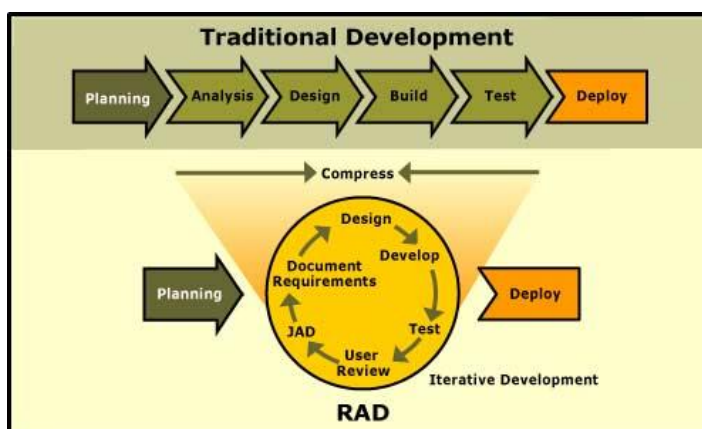


Figure 1.1: RAD Phase

These are the descriptions about each of the phases in RAD development:

i. Requirements Planning

This stage is where the brainstorming of the idea to create the project of MyBanjir Update using mobile application. The requirements are being studied throughout this process. The objective number one can be achieved in this phase.

ii. User Design

This stage needs to model the system's data and processes and to build a working prototype of critical system components. To develop the MyBanjir Update using mobile application, the design must meet the criteria to make it easy for the user to use this application. The objective number two can be achieved in this phase.

iii. Construction

Development Stage- This stage completes the construction of the physical application system, builds the conversion system, and develops user support and implementation work plans.

iv. Deployment

Deployment Stage- This stage includes final user testing and training, data conversion and the final implementation of the application system.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, it will discuss on six subtopics that will cover the definition of mobile application, the existing system, and the software requirement for developing the system.

Subtopics 2.2 will explain about the definition of mobile application in general. Subtopic 2.3 will discuss on the alert system while 2.3.1 will discuss the flood alert system. Subtopic 2.4 will cover the existing system. Subtopic 2.5 will explain the comparison of the existing system functionality. The last subtopics 2.6 will explain the development tools used in this MyBanjir Alert system by comparing the other tools.

Overall contents in this chapter will provide the detailed information of implementation that will carried out in this project.

2.2 Mobile Application

Mobile application is one of the most interesting software applications that are designed to run on a smartphones or tablet. Technically, mobile application serve to provide users with services, games or any kind of things that can be access through PCs. The different is that, mobile apps are generally small, that have limited function. The app is program by JavaScript or HTML5 to provide interaction, navigation or any other functional system (Appypie, 2014).

There are many kind of mobile application such as native application, web application, and hybrid application. Three type of this application have their own advantages and disadvantages. In mobile development section, native application is developing the app using the programming language and interface for a specific operating system and device(IBM Worlight, 2013). For the web application, it is just a web browser that delivers through mobile device and for the hybrid application, it compromise between native and Web. The hybrid application develop in industry-standard Web programming languages, such as HTML5 and JavaScript, then package in a natively installable format for app store distribution (Web Based Programming, 2013) . It is actually save cost with reusing the codes.

On the article by Priya Wiswanathan an application developer said that mobile app development is emerging more popular and becoming one of the best technologies in the world (Mobile Device About, 2014). Besides, mobile app development becomes a veritable treasure-trove for the developer to make a decent sum of money every month, by way of creating mobile applications.

2.3 Alert System

Alert system is an application or software that gives alert, warning or update about any kind of situation such as flood, earthquake, medical, and tornado. Technically, alert system is developed to give a warning sign much more in catastrophe incident or in emergency situation (National Weather Service, 2014). Alert systems are intended for extraordinary phenomena expected to be of a scale that will far exceed the warning criteria (Disaster Warning, 2014). Warnings and advisories continue to be issued in their current form so that citizens will take extra precautions.

2.3.1 Flood Alert

Flood Alert is a process that gives immediate update and warning about flood in certain area (National Whether, 2013). The systems are view sometimes in mobile application, a device or in software on a computer. Most of the flood alert nowadays comes in a device that place in rural area nearby the river. It gives out a loud siren to warn the villagers. This device may have some disadvantages for people that are not in home. They maybe are outside working or doing any important things without knowing what is happening to their house.

Technically, flood alert system that has been created must connect with a trusted weather agency in certain area to get the forecast of the water level and rainfall (Meta Office, 2013). This is because, the information that are going to spread all of the citizens must be 100% accurate. It needs to get the citizens to be well prepared.

2.3.2 Disaster Whether Alert

Disaster whether alerts is a system that detects any disaster happened when monitoring the weather. The alert is much heavier such as tsunami, hurricane, volcanoes and many more. Warning about the disaster happened sometimes is shown in television or newspaper but there are some citizens not always review from that medium. Based on the research from Pew Research Center, the percentages of citizens listened to radio news, read a newspaper and watching television have steadily declined over the past two decades that is from 39% to 25% (Pew Research Center, 2014). On the other hand, the percentage of online news in mobile device has increased rapidly throughout the years. This shows that, online news is more relevant in this new era.

Disaster whether alert are famous in mobile application. Nearly 1.5 million global users who stay connected and informed with Disaster Alert in Android and IOS (Pacific Disaster Center, 2014). By accessing the Disaster AWARE platform, it provides users with near real-time access to data on active hazards globally, showing events that are designated potentially hazardous to people, property, or assets. Disaster Alert makes complex technical and scientific information easy to understand.

2.4 Existing System

Several studies have been made to find the different type of the application but have the same functional throughout the system. The existing applications are run through Android that can be downloaded through Android Market. These applications are not supported between the users in Malaysia. The application is only applicable in Europe area. Reviews and disadvantages about of the applicationns are discussed in next sub-section.

2.4.1 Flood Warning

Flood Warning is an Android base mobile application for giving a warning to the certain flooded area. This Android Application provides updated 24/7 information from the National Weather Service for Flood Warnings and Reports for 49 states plus Territories except Guam and Hawaii. Besides that, it also provides National Forecasts as well as Severe Weather alerts that are happening across the country. Based on the [googleplaystore.com](https://www.googleplaystore.com), this application get a high rating compare from others application that has same functionality.

Figure 2.1 shows the screenshot for the homepage of this application. It previews some of state and places that is being monitor. When user clicks to the certain area for example Alabama, it previews the flood forecast including the readings of the water level in Alabama. Basically this application only has one functional that is viewing the flood forecast of the infected area.



Figure 2.1: Screenshot on flooding places

2.4.2 Flood Alert

Flood Alert enables you to quickly check the current situation both nationwide and in user local area (Google Playstore, 2013). User can do this by checking the flood forecasts and the river and sea levels on the Environment Agency or Natural Resources Wales websites, by listening to local news and weather forecasts or now by simply opening the Flood Alert application on the smartphone or tablet.

Flood Alert allow user to monitor live status of flood alerts that are relevant to user current location. Besides that, user can monitor live flood alert information displayed by regions, local authority areas or counties that is display in Google Map. Figure 2.2, shows the map that is infected with flood. The alerts are being post within approximately 5km from the area. Literally, this application has limited function such as it did not provide a direction to specific safe house when there is incoming flood around the area.

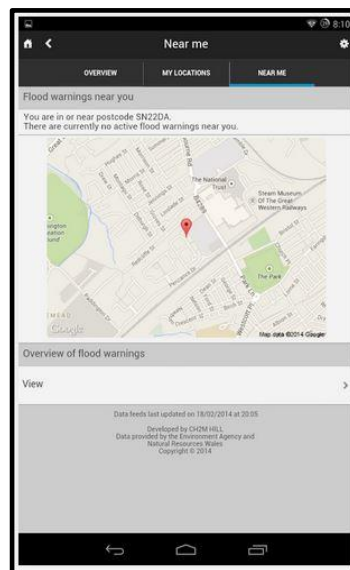


Figure 2.2: Screenshot of a map showing flooded area

2.4.3 Disaster Alert

Disaster Alert is one of the Android applications that preview active hazards on the interactive map and in a list as they are occurring around the globe. Additional hazard information can be viewed and shared. The term "Active Hazards" refers to a collection of current and real-time incidents which have been designated potentially hazardous to people, property, or assets. The advantage of this application is that it includes all disaster such as hurricane, earthquake, flood and any other disaster. The application is not specific to the flood alert.

Figure 2.3 shows the active hazards to the certain area. There are 3 different labels defining different situation that is warning, watch and advisory. The alerts shown are not being categorized in each state or places. It shows all of the disaster happens in all around the world.



Figure 2.3: Screenshot of warning sign on flooded area